

RECEIVED  
CENTRAL FAX CENTER

JUN 08 2004

OFFICIAL

## UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. no. 10/707,644

Attorney docket no. FREIP048DV

Conf. no. 1643

Filed: December 29, 2003

By fax (703) 872-9306

## LETTER

In a previous Office Action, the Examiner had deemed certain claims supposedly unpatentable over US Pat. No. 5,701,480 to Raz et al. ("Raz"). This paper draws the Examiner's attention to arguments with respect to Raz.

Raz is similar to the present application in that a global (root) transaction can have children at different sites. That is all there is in common between Raz and the claimed invention.

The information that Raz propagates concerns the relative ordering of child transactions at different sites. Raza wants this to be the same order at all sites, and so they propagate graph information and ordering information (timestamps) to do this.

This is shown throughout the Raz patent, beginning with the title "commitment ordering". This is shown in the independent claims. This is summarized in the abstract (emphasis added):

[...] The read-write transactions are selectively aborted to enforce an order of commitment of read-write transactions that is the same as an order of conflicts among the read-write transactions. In a preferred embodiment, the read-write transactions are serialized by maintaining and referencing a graph of conflicts among read-write transactions, and the read-only transactions are serialized by a timestamp mechanism for selection of the snapshots to be read. Each time that a read-write transaction is committed, the read-write transaction is assigned a unique timestamp that is used to timestamp all resources committed by the read-write transaction. Upon starting, each read-only transaction is also assigned a timestamp. Each read-only transaction reads only the latest committed versions of all resources, that are timestamped earlier than the timestamp of the read-only transaction. In a multiprocessing system, the timestamps are issued to global coordinators and distributed locally with atomic commit messages and global queries. [...]

As an example: if two different credit cards are charged then Raz enforces the order in which this happens. This is required for serializability (a mathematical property of correctness).

The present invention does not need to pass information related to child transaction orderings. Neither is it necessary to pass such information for guaranteeing serializability. Each service can do that on its own.

Instead, information about the number of children that are believed to exist is propagated. This information is not used to enforce any ordering or serializability, but is used to detect lost acknowledgments.

This relates to communication failures, and is independent of serializability. In consequence, it is not anticipated by Raz.

Continuing the example: if only one credit card is charged then Raz has no need to propagate any orders (there is only one transaction). According to the present invention, however, the number of children (1 in this case) is propagated. This is needed to cover the scenario where the credit card IS charged successfully, but the acknowledgment is lost. As a result, the client transaction could RETRY the charge request, effectively billing the customer twice! Raz does not prevent this, while the present invention does, thanks to the propagated information about the number of children.

In consequence, pending independent claim 8, which comprises the corresponding features in the last three paragraphs (emphasis added):

[...] propagating from a first process to a second process a message indicative of a globalCommit operation with respect to a root transaction, said message also indicative of a number or identifying list of invocations which the first process has made to the second process on behalf of the root transaction;

within the second process, comparing the number or list indicated in the message with a

count or list within the second process of the number or list of invocations which have been made on behalf of the root transaction;

in the event the comparison yields a non-match, aborting the transaction.

definitively is not disclosed or suggested by Raz, since Raz is concerned with ordering, and the present invention is based on a single number or on a comparison of unordered lists.

The same holds for independent claims 10 and 11 which comprise the same features as cited above.

Furthermore, dependent claim 7 is directed to the dynamical change of concurrency preferences. This is explained in the application in the paragraphs following [0049] and in particular from [0052] to [0055]. The rejection of the same claim 7 in the parent application does not make specific reference to column and line numbers where the various limitations supposedly may be found. It is hoped that the Examiner will explain exactly where, in the cited reference, the limitations of claim 7 may be found, or in the alternative it is requested that claim 7 be allowed.

Respectfully submitted,



Carl Oppedahl  
PTO Reg. No. 32,746  
Oppedahl & Larson LLP  
P O Box 5068  
Dillon, CO 80435-5068  
telephone 970 468 6600